Dan Leavitt

From: RCzebiniak [RCzebiniak@defenders.org]
Sent: Wednesday, December 14, 2005 8:30 PM
To: Dan Leavitt
Cc: KDelfino; CWilkerson
Subject: Scoping Comments - Bay Area to Central Valley Corridor

Dear Deputy Director Leavitt,

The attached document contains Defenders of Wildlife's scoping Comments in Response to the Notice of Preparation for the Proposed California High Speed Rail Project, Bay Area to Central Valley Corridor, Environmental Impact Report/Environmental Impact Statement (EIR/S).

Please feel free to contact me if you have any questions relating to our stance on High Speed Rail in California. Thank you for affording us an opportunity to provide comments on this critical issue.

Truly Yours,

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PLEASE NOTE: The California Program Office of Defenders of Wildlife has moved to a new address. Please note the updated contact information above.

December 14, 2005

Dan Leavitt, Deputy Director
California High Speed Rail Authority
Draft Program EIR/EIS Comments
925 L Street, Suite 1425
Sacramento, CA 95814

Re: Scoping Comments in Response to the Notice of Preparation for the Proposed California High Speed Rail Project, Bay Area to Central Valley Corridor, Environmental Impact Report/ Environmental Impact Statement (EIR/S)

Dear Deputy Director Leavitt:

On behalf of Defenders of Wildlife and our more than 100,000 members and supporters in California, I am writing to provide scoping comments in Response to the Notice of Preparation for the Proposed California High Speed Rail Project, Bay Area to Central Valley Corridor, Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) for the Proposed California High Speed Rail Project ("Project"). While we support the concept of providing high speed rail transportation to California's growing population, we are nonetheless concerned that this project's environmental documents may not be in compliance with the California Environmental Quality Act ("CEQA") and National Environmental Policy Act ("NEPA").

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I. The EIR/EIS Analysis of Biological Impacts

The EIR/EIS documents for the proposed Bay Area to Central Valley Corridor must discuss the relative quality and importance of the habitat to be destroyed in relation to the overall survival of applicable species. Failing to do so will render the EIR/EIS inadequate for informing alignment decisions because alignment choices will sharply affect most, if not all, of the biological impacts listed below.

A. Data/Information:

The EIR/EIS identification and analysis of wildlife habitat cannot be limited to the habitat occurrence data in the California Natural Diversity Database. These occurrences are not comprehensive and only cover areas that have been surveyed. Large amounts of unsurveyed land (often private lands) may have higher densities of species, but since no surveys have been conducted, the quality of this habitat is unknown. However, the EIR/EIS would score this as low to zero habitat value. It is unacceptable to make decisions regarding the relative impact of the various route alternatives (and indeed impossible to identify the least environmentally damaging alternative) without on-the-ground data that reflect the real biological condition.

Similarly, the EIR/EIS identification and analysis of wetlands cannot be limited to the National Wetlands Inventory. The Inventory database provides only a very coarse and incomplete analysis of wetlands in California. The database is compiled by aerial photographs of landscapes in which many smaller wetlands are not readily distinguishable. In addition, many areas in California have not been photographed. In order to ascertain a more complete picture of wetlands impacts, the environmental documents need to conduct a more thorough review of potential wetlands impacts, including on-the-ground surveying efforts.

B. Analysis of General Impacts to Biological Resources:

Roads are one of the top causes of species imperilment in California (National Wildlife Federation 2001) and the impacts of railroads as linear transportation features are assumed to be similar. Specific ecological effects of roads have been thoroughly documented (Forman and Alexander 1998, Trombulak and Frissell 2000, Natural Resource Defense Council 1999). The key impacts are mortality from project construction, road kill, habitat fragmentation, alteration of movement and behavior, spread of exotic species, spread of human activity, reduction of environmental quality, and facilitation of urban sprawl. All of these are major impacts to wildlife that must be discussed in the EIS/EIR.

1. The EIR/EIS must consider the environmental advantages of Rail Corridors over Highways

The EIS/R must explicitly list and discuss the following advantages of railway corridors over highways (from DeSanto and Smith 1993):

1. Water drains away from the railbed, maintaining a dry environment that prevents unwanted vegetation from establishing.
2. The bed and banks have a porous, stable ballast that prevents runoff from concentrating, keeps slope erosion to a minimum, and filters out particulates and chemical pollutants.
3. A service road or other narrow strip running alongside the rail prevents ballast spoils from shifting beyond the toe of the roadway slope.
4. Drainage ditches parallel to the rail prevent uncontrolled erosion, act as sediment traps, filter railway runoff, and insulate adjoining land from uncontrolled channel flow.
5. High Speed Rail (HSR) construction usually leaves a significantly smaller footprint than road construction, so it has smaller short-term impacts.

6. HSR corridors are narrower than roads, so animals are more willing to cross under them. This is a significant advantage.
7. It is more feasible to elevate an HSR system on pile-supported structures than to elevate a road. "Elevated corridors on bridges or viaducts undoubtedly have the least disruptive impact on wildlife movement and migration passageways."

The EIR/EIS must include a sufficiently detailed discussion of these issues.

2. The EIR/EIS must analyze the impacts of habitat fragmentation

Expanding networks of roads force wildlife to live on ever-shrinking islands of habitat, where it is more difficult for them to find food, water, shelter, mates, and protection from predators. Genetic problems such as inbreeding appear, and populations become more susceptible to catastrophic events such as wildfire. The resulting fragmented habitat inevitably leads to smaller populations of wildlife, and extinction of populations or species becomes more likely.

Fragmentation also increases the ratio of edge habitat to interior habitat, which is harmful to those species that need interior habitat. The concept has been best documented in forest-dwelling birds. The inside of a habitat has a different climate and supports different and usually more sensitive species than do the edges. In forested areas, edges associated with roads are a source of nest predators and brood parasites. Aggressive species such as brown-headed cowbirds and blue jays thrive in edge habitats (e.g. Baker and Lacki 1997). Snakes, raccoons, and other predators hunt along the edge. Species that occur only within the interior of forests, such as the ovenbird, scarlet tanager, hooded warbler and a number of other migratory songbirds, can't withstand the predation or can't compete against the more aggressive edge species, and they die out, reducing the biodiversity of an area (Porneluzi and Faaborg 1999, Rosenberg et al. 1999, Robinson et al. 1995). DeSanto and Smith (1993) discuss the habitat fragmentation consequences specific to HSR systems. They conclude that the long-term impacts of habitat fragmentation are directly related to the area and type of habitats replaced and discuss. A European Commission Report (COST 2000) discusses the habitat fragmentation effect of railways.

The Missing Linkages report and associated GIS overlays identify major areas of movement throughout the state. However, identifying areas where these linkages will be cut off by the HSR route does not adequately address the significant habitat fragmentation impacts that the alignment will have. Every mile of this rail corridor has the potential to fragment habitat of species and have impacts on ecological functioning. The EIR/EIS must be present the significant fragmentation impacts of the various alignments to wildlife species of concern, not only species that are currently threatened and endangered.

The EIR/EIS should place special emphasis to wide-ranging species such as mountain lions, coyotes, bobcats, and bears. By virtue of their need to access large areas of habitat, these species would be significantly impacted even if they are not currently identified as "sensitive." Much work has been done looking at the movement needs and impacts of roads on these species (e.g. black bears – Brody and Pelton, 1989, mule deer and elk – Rost and Bailey 1979) and even their needs in terms of wildlife crossing to avoid and mitigate impacts from transportation infrastructure (e.g. Evink 1990, Leeson 1996). Specifically for mountain lions, a 9 to 12 foot fence, with a 12-48 inch foot overhang with barbed/predator or electric wire at the top to stymie a cat from climbing over are recommended. Florida uses a 10 foot fence with 3 barbed wires for an overhang to keep lions off highways and channel them into culvert underpasses. A noted above the HSR proposes to use security fencing that is only 8.2 ft high. Insufficient height and design could potentially lead to mountain lions on the track, obviously a threat to wildlife survival and human safety.

Habitat fragmentation can present significant problems for the normal functioning of ecological processes. For example, pollination is a major ecological process that will be impacted by the proposed HSR project. Bhattacharya et. Al (2003) found that while bumblebees have the ability to cross a road and a railroad, these structures may restrict bumblebee movement and act to fragment plant populations because of their site fidelity when foraging. The bumblebees they studies rarely crossed railroads even when suitable habitat was only 30-40 m away on the other side. This signifies that High Speed Rail may have significant and unquantifiable impacts on plant species which depend on these pollinators for their reproduction, genetic flow and ultimate survival. Additionally, the rail will fragment bumblebee (and presumably that of other insect) habitat, with the associated lower survival and reproduction. The ability of an ecosystem to survive a natural disaster (such as fire, earthquake, windstorm, disease outbreak) is decreased as habitat is fragmented. Fragmentation also limits the ability of species and ecological communities to respond and adapt to global climate change. The EIR/EIS must address the impacts on all such ecological processes.

3. The EIR/EIS must analyze impacts from the invasion of non-native species alongside rail alignments.

Roads spread exotic species of plants and animals, which then compete with native species. Exotic plants tend to favor disturbed habitats, so they thrive along the side of new roads. They also tend to grow and use resources very fast, depriving native vegetation of important resources. In the past, exotic species sometimes have been introduced to roadsides to control erosion, with severe ecological consequences. Along a California pipeline, exotic species invaded adjacent grassland, coastal sage, and oak woodland habitats (Zink et al. 1995). In the Mojave desert, the plant *Brassica tournefortii* has spread along roads and since 1995 has been encroaching beyond roadsides into pristine habitat. Similarly, *Hirschfeldia incana* [*Brassica geniculata*], *Descurania sophia*, *Sisymbrium irio*, *Sisymbrium altissimum*, and *Salsola* spp. are also found locally along roadsides in the Mojave (Brooks and DeFalco 1999). The ecological changes associated with these exotic plants directly degrade habitat for the threatened desert tortoise. Gelbard and Harrision (2003) found significantly more invasive species at distances closer to roads in Central Valley grassland communities. A review of literature regarding the impacts of railroads on wildlife (van der Grift 2001) indicates that trains introduce exotic plant species through the spread of seeds. The EIR/EIS must discuss the potential impacts to native species posed by the resultant spread of invasive species and present appropriate mitigation.

4. The EIR/EIS must analyze impacts to wildlife from noise, vibration, lighting, and electromagnetic fields (EMF) and electromagnetic interference (EMI)

The construction and operation impacts of the proposed HSR will have major impacts on wildlife. The ecological impacts due to noise, vibration, lighting, electromagnetic fields (EMF) and electromagnetic interference (EMI) must be analyzed in the EIR/EIS.

Noise, vibration and lighting all lead to avoidance by wildlife species and contribute to habitat fragmentation (DeSanto and Smith 1993). Many animals use sound to communicate, navigate, avoid dangers, and find food (Bowles 1997). Thus, Bowles finds that negative impacts of noise are reduced health, altered reproduction, survivorship, habitat use, distribution, abundance, or genetic composition, and harassment. For example, recordings of dune buggy sounds played intermittently for less than ten minutes at a lower intensity than normal caused hearing loss in sand lizards and kangaroo rates, rendering them unable to respond to recorded predator sounds (Andrews 1990). The impacts of sound vary by pitch, duration, loudness, and species. In general, mammals hear from below 10 hertz (Hz) to over 150,000 (Hz) (Bowles 1997, Fay 1988), birds from 100 Hz to about 10,000 Hz (Fay 1988, Kreithen and Quine 1979), reptiles between about 50 and 2000 Hz (although snakes and turtles hear quite poorly – Forman et al. 2003), and amphibians between 100 and 2000 Hz (Forman et al. 2003).

Vibrations from low-frequency noise are readily detectible by some animals, especially birds and reptiles (Bowles 1997, Shen 1983). Detection of vibration is particularly important in the detection of predators, probably especially for reptiles because of their poor hearing. The impacts of noise and vibration will depend on the frequency of train passage, the type of construction, the surrounding habitat (e.g. noise will travel further in an open field than in a forest) and the speed of the train itself. Forman et al. (2003) report that noise impacts from a Dutch highway with 50,0000 vehicles per day and a traffic speed of 120 km per hour reach beyond 800 m (approximately a half mile).

Mountain lions are known to avoid crossing areas that are lit at night (Beier 1995). This behavior is expected to be true of other nocturnal species.

Defenders of Wildlife was able to ascertain through communication with an engineer from the Train Riders Association of California (D. MacNamara, personal communication) that the overhead cables will be continuously electrified. A state of the art European Commission Report (COST 2000) indicates that railways cause bird mortalities through collision with trains, overhead cables, and electrocution. Winter season has the highest number of casualties with one summer study on the North TGV line reporting 3.4 dead birds per kilometer per month. This would lead to over 3800 dead birds in the summer months on the proposed HSR 700 mile length, with yearly estimates expected to be over 7500 as more birds were killed in the winter. Birds of prey were the most vulnerable. Overhead cables are dangerous mostly for low-flying birds and birds of prey that hunt by skimming the ground. This impact can be reduced when: 1) cables form dense, continuous networks (especially near stations and railway junctions); 2) There is vegetation along the track at least as high as the cables; and 3) when the cables are in trench tracks which are avoided by birds. In the COST study, electrocution accounted for a small percentage of the birds killed on railways. It is suggested that in order to reduce this threat, the catenary suspension wire should be insulated, a platform should be installed over the support, or the insulator should be oversized to discourage perching. We have summarized suggestions for fencing and wildlife crossings that would reduce the mortality from collisions in our comments regarding mitigation.

Finally, the EIR/EIS must discuss the potential impacts of Electromagnetic Fields (EMF) or Electromagnetic Interference (EMI) on wildlife. Possible impacts could include changes in orientation, for both short and long-distance movements, avoidance of habitat, and disturbance of daily activities, all of which are likely to be significant. These impacts must be analyzed.

5. The EIR/EIS must analyze impacts to proposed and final federally designated critical habitat

The federal Endangered Species Act prohibits the destruction or modification of listed species' critical habitat. See 16 U.S.C. § 1536(a)(2). Section 7 of the ESA requires that federal agencies consult with the US Fish and Wildlife Service to determine if a project will "adversely modify" critical habitat. Id.

Recent court rulings clearly emphasize that critical habitat is designated to provide for the survival and recovery of a species. (Center for Biological Diversity vs. Bureau of Land Management, Northern California District Court 2004; Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service, 9th Circuit 2004) Modification that decreases the likelihood of survival or the likelihood of recovery is unlawful. There are numerous species with designated and proposed critical habitat within the impact area of the HSR project. The EIR/EIS should consider impact in even those areas in which critical habitat is only proposed as potentially significant impacts because by the time the environmental documents for this project are finalized, most of the proposed designations will have become final.

Critical habitat is comprised of land officially designated by the USFWS to contain the primary constituent elements for a listed species. This habitat cannot be "adversely modified" in any way that would impact the survival or recovery potential of the species. Clearly running a HSR track and fencing the entirety of the alignment within critical habitat would constitute adverse modification.

6. The EIR/EIS must demonstrate and assess its consistency with federal threatened and endangered recovery plan goals

The federal ESA requires the development of a recovery plan for species that are listed as threatened or endangered. The purpose of the ESA is to provide for the ultimate recovery of at-risk species, thus the goal of every recovery plan is to reach a level of conservation to ensure survival of the species and thus allow it to be removed from the ESA list. Recovery plan are often state of the science documents that have been developed by the experts of the relevant species. These plans are excellent road maps, including the identification of core recovery units that provide the necessary context within which to analyze the impacts of particular projects on a listed species. As such, these plans should be consulted and the EIR/EIS must analyze consistency of the proposed project with these plans and the ultimate choice of alignment must not conflict with these plans. Currently there are recovery plans in place for the San Joaquin kit fox, desert tortoise, Bay checkerspot butterfly, delta smelt, California red-legged frog, blunt-nosed leopard lizard, California condor, marbled murrelet, giant kangaroo rat, Fresno kangaroo rat, short-nosed kangaroo rat, Tipton kangaroo rat, San Joaquin Valley riparian woodrat, arroyo toad, Pacific pocket mouse, Riverside fairy shrimp, and San Diego fairy shrimp. Recovery plans are being developed for 15 vernal pool species, the giant garter snake, Alameda whipsnake, and western snowy plover and these should be incorporated into the EIR/EIS analysis if they have become available by the time of the next draft. To the extent possible, input should be solicited from the US Fish and Wildlife Service to receive any draft recovery goals or input for these species.

7. Scientific literature to be considered

A vast amount of literature exists about the impact of roads on ecological systems, much of which is equally applicable to high speed rail. Notable summaries are covered in Forman et al. 2003, NRDC 1999, Evink 2002, and White and Ernst 2003. We request that an in-depth literature review be conducted on the impacts of high-speed rail on biological resources and be presented as part of an updated EIR/EIS. We specifically request that Rodriguez et al. (1997), Andrews (1990), Yanes et al. (1995), DeSanto and Smith (1993) be included in this review.

8. The EIR/EIS must asses impacts to conservation lands and planning areas

Regional conservation plans and County General plans are both designed to direct development into certain regions based on stated priorities. The addition of HSR service and associated stations will have an enormous impact on growth of this development. The impact of the HSR alignment options must be analyzed for consistency with regional conservation plans and County General Plans. The EIR/EIS must discuss the impact of the proposed project on all ecological reserves and regional conservation planning efforts. In addition, the regional conservation plans that are currently in scoping or planning phases must be considered and discussed as impacts from HSR could significantly change their reserve design capabilities.

9. The EIR/EIS must assess the economic costs of wildlife impacts

In France, there are 16,500 km of railway lines: 1500 km of TGV lines (existing and under construction) and 15,000 km of main lines (in service and electrified: electrification is used as a criterion of heavy traffic). The cost of direct collisions with wildlife is considerable. In 1992, on the high speed South East line (Paris-Lyon) 21 collisions incurred an expense of 1.26 million Francs (192,000 euros), due to delays and equipment repair costs (COST 2000).

10. The EIR/EIS must analyze the disruption of wildlife movement corridors

The EIR/EIS analysis must identify the relative impacts on wildlife corridors that would be caused by each potential alignment. Furthermore, this analysis must go beyond the by the Missing Linkages Report, because the report lacks an adequate analysis regarding which species are affected. Additionally, there is no analysis of the level of the impact on these species in terms of the significance of the disruption of their movement corridors on their ability to survive. For instance, a fence that was erected to keep foot and mouth disease from spreading into South Africa caused the death of hundreds of thousands of wildebeest because it prevented them from moving north (Andrews 1990). Impacts that must be discussed include entanglement in fences, restriction of access to needed water supplies, prevention of movement into good habitat, disruption of seasonal movement, limited dispersal which causes local overpopulations, and inbreeding due to genetic isolation. Therefore, the EIR/EIS must include identification of the species, the specific corridors that would be disrupted, and what this disruption means for the species' conservation for each considered alternative.

11. The EIR/EIS must include an analysis of impacts to vernal pools/ wetlands

Any adequate analysis of the vernal pool and wetlands impacts must go beyond the data contained in the National Wetlands Inventory. This inventory is incomplete in California and, similar to the reliance on the CNDDB for species occurrences, is biased towards areas that have been surveyed opportunistically. A complete analysis of wetlands impacts requires on-the-ground surveys to document presence. Additionally, wetlands are impacted far beyond the project footprint, with any changes in watershed hydrology potentially altering wetland functions anywhere within that watershed. For vernal pools, initial proposed critical habitat (67 FR 59883 59932; September 24, 2002) should be used to determine impacts to the 15 listed vernal pool species critical habitat. The final vernal pool critical habitat is currently under litigation due to the exclusion of nearly 1 million acres based on faulty calculations by the US Fish and Wildlife Service. Until an acceptable new designation is released, the original proposal must be used to assess the impacts.

C. Species and habitat concerns that appear in several alignments

1. Impacts to Grasslands

Central Valley grasslands are a highly threatened ecosystem, with over 95% of the native habitat overrun with invasive, annual grasses. The remainder is under imminent threat from urban and suburban development and changing agricultural practices. Special statues birds (including federally and state listed threatened and endangered or special concern) number seventeen and include: Swainson's hawk, California burrowing owl, loggerhead shrike, horned lark, grasshopper sparrow, northern harrier, white-tailed kite, white-faced ibis, tri-colored blackbird, sandhill crane, ferruginous hawk, prairie falcon, short-eared owl, golden eagle, mountain plover, long-billed curlew, and Merlin. Additionally, Central Valley grasslands attract the highest density and diversity of wintering raptors anywhere in the world. This habitat also supports several endemic or near-endemic species or subspecies of reptile and amphibians including the San Joaquin whipsnake, the blunt-nosed leopard lizard, Gilbert's skink, and the giant garter snake. The Delta green ground beetle and Valley elderberry longhorn beetle are federally listed insects that occur in grassland habitats. Grasslands historically supported several large mammals including pronghorn antelope, elk, (including Tule Elk), mule deer, grizzly bear, gray wolf, coyote, mountain lion, ringtail, bobcat, and San Joaquin kit fox, many of which still roam the less developed remnants.

The EIR/EIS must adequately analyze the impacts in terms of quality of habitat that will be impacted and how this effects the ability of species to survive as well as use this habitat as part of the Pacific Flyway. Of particular concern is the Grasslands Ecological Area of the northern San Joaquin Valley, This is a 160,000-acre area in Merced County located between the towns of Dos Palos, Los Banos, Gustine and Merced. The Grasslands includes seasonally flooded wetlands, semi-permanent marsh, woody riparian habitat, wet meadows, vernal pools, native uplands, grasslands, and native brush land. This collection of diverse habitats is important for a wide variety of wetland species and hundreds of thousands of shorebirds migrate through the area. It has been recognized by the Western Hemisphere Shorebird Reserve Networks one of fifteen internationally significant shorebird habitats, by the American Bird Conservancy as a Globally Important Bird Area, and is currently nominated as a Wetland of International Importance under the Ramsar Convention. All three of the prestigious titles recognize the importance of the grasslands to a variety of wildlife, including several rare and endangered species, its critical role as wintering habitat for Pacific Flyway waterfowl, and its status as the largest remaining block of wetlands in what was once a vast Central Valley ecosystem. Although Grasslands provides wintering habitat for twenty percent of the Pacific Flyway waterfowl populations, encompasses one of the largest remaining vernal pool complexes, and supports several federally listed or proposed threatened and endangered species including the San Joaquin kit fox, Aleutian Canada goose, Swainson's hawk, and tri-colored blackbird, this area was not adequately addressed in the original Draft EIR/EIS.

In addition, the growth-inducing impacts of stations in Los Banos, Merced, and Gilroy will be enormous for the Grasslands Ecological Area and must be analyzed. We predict that these impacts will be too significant to mitigate. As a result, we recommend no stations be built in these locations. The final alignment may need to avoid this area altogether due to the ecological impacts. Ultimately the goal of the HSR project should be to connect the larger metropolitan centers in the state, not to create more in ecologically sensitive areas.

2. California Burrowing Owl

The California burrowing owl is a California state species of special concern. This species is known to occur (CNDDB) throughout the entire alignment of the HSR proposal. Records indicate that California burrowing owls have been found within 1800 ft of previously proposed alignments, including: Sacramento to Stockton (Alignments UP1, UP2, BNC1, BN1, UP5, UP6, BNC2), San Jose to Oakland (west and east alignments), San Jose to Merced (Southern route alignments), and Tulare to Bakersfield.

Of particular concern is that burrowing owl often prefers to nest near roads and artificially raised areas (such as berms and levees). Clearly, nesting near the HSR alignments could pose a problem in terms of survival including collision mortality, increased predation risk, and decreased habitat connectivity. We expect the EIR/EIS to include information an all impacted species such as the following example for burrowing owl:

- Species description
- Distribution
- Seasonal activity
- Substrate Affinities and Burrow use (or equivalent special habitat needs)
- Home range
- Reproduction
- Dispersal
- Habitat characteristics
- Population status
- Threats
- Conservation status
- Impact of proposed project
- Mitigation
- Justification that mitigation reduces the impacts to a non-significant level

D. Impacts to potential alignments in the Bay Area to Central Valley Corridor

The spatial area analysis of species and habitat within a specified distance to each potential alignment must be sufficiently considered for all impacts, especially fragmentation and wildlife movement corridor impacts. A biologically defensible impact zone must be determined and analyzed in the EIR/EIS. In the GIS analysis references in prior comments to the HSR Authority, we buffered the proposed HSR alignments by 1800 meters on each side, as Forman et al. (2003) indicate that several biological effects of roads (including stream sediment, noise, vibration and light, habitat fragmentation/isolation, disruption of wildlife movement corridors, invasion by non-native species, and increased human access) go well beyond 1000 m.

Although we understand that the HSR Authority will consider new alternative locations for the Bay Area to Central Valley corridor, our understanding is that several locations initially considered in the original Project EIR/EIS will most likely be considered in the upcoming corridor-specific EIR/EIS. The information and comments that follow are therefore expected to be applicable.

1. Bay Area to Merced Route:

The following comments are in addition to the detailed comments previously presented by the Loma Prieta Chapter of the Sierra Club to the HSR Authority:

San Joaquin Kit Fox (SJKF)

The EIR/EIS must identify and analyze the SJKF habitat will be impacted by the Bay Area to Central Valley corridor alternatives. This analysis must include essential elements of SJKF biology, especially pertaining to movement needs, which make it particularly susceptible to negative impacts from the proposed high speed rail project. Without knowing the characteristics of this impact, it is difficult to impossible to plan to avoid and mitigate them. The EIR/EIS must include information such as the dispersal requirements and discuss wildlife crossing structures and how they can best be designed for this species. In particular, we request that information from previous crossings developed in consultation with the US Fish and Wildlife Service and the San Joaquin Kit Fox Planning and Conservation Team be consulted. HSR alignments in San Joaquin kit fox habitat should be equipped with directional fencing, frequent underpasses, and escape dens to prevent high levels of predation by coyotes.

All north and south alignments from Merced to San Jose cross through areas within Stanislaus and or/ Merced Counties that are identified as high priority recovery efforts by the US Fish and Wildlife Service Recovery Plan for the San Joaquin Kit Fox. These proposals will directly impact between 2019 and 3122 acres of this species habitat and fence off a major wildlife corridor for this species. The resultant habitat loss and fragmentation can cause decreases in fox abundance through changes in social ecology, productivity, spatial use, dispersal, and survival (Bjurlin 2003). San Joaquin kit foxes may range up to 20 miles at night during the breeding season (Girard 2001) and up to 6 miles during the pup-rearing season. Because they move at night, any lights associated with the high-speed rail project will have a negative impact on the ability to survive in the vicinity.

a. SJ to Bay Area Route

i. SJ to SF Alignment

Wildlife movement corridors impacted:

- BA 107: This corridor contains riparian areas as well as bay wetlands. It also provides a linkage for waterfowl, shorebirds, and the harvest mouse.

ii. SJ to Oakland Alignment

Critical habitat impacted:
- California tiger salamander critical habitat is impacted by the west route, Union City to SJ via coastline alignment.
- Vernal pool species critical habitat is impacted by the west route, Union City to SJ via coastline alignment.

Wildlife movement corridors impacted:
- BA 103: This corridor includes the Alameda Creek Watershed, which is a key linkage and choke point for steelhead, western pond turtle, CA red-legged frog and foothill yellow-legged frog.
-BA 104: This corridor contains Coyote Creek, which is a linkage and choke-point for salmon.
-BA 107: The HSR alignment crosses this corridor twice on the west route. This corridor contains riparian areas and bay wetlands which serve as linkages and stepping stones for waterfowl, shorebirds, and the harvest mouse.

b. SJ to Merced Alignment:

Critical habitat impacted:
- California tiger salamander
- Vernal pool species (South lines alignment)

Wildlife movement corridors impacted:
-BA 104: This corridor contains Coyote Creek, which is a linkage and choke-point for salmon.

i. North Lines – The Diablo Alignment

Wildlife movement corridors impacted:
-CV 8: This corridor is important for San Joaquin kit fox, giant kangaroo rat, blunt-nosed leopard lizard, short-nosed kangaroo rat, and LeConte's thrasher.
-CV 19: This corridor is important for Riparian brush rabbit, wood rat, W. yellow-billed cuckoo, neotropical migrants, ringtail (riparian habitat major). There is a need to maintain riparian species refugia above flood levels as part of the Recovery Plan for Upland Species of the San Joaquin Valley, USFWS 1998.
-BA 103: This corridor contains the Alameda Creek Watershed, which is a linkage and choke point for steelhead, western pond turtle, CA red-legged frog and foothill yellow-legged frog. This corridor is impacted by the North Tunnel Alignment Option.

-BA 104: This corridor contains Coyote Creek, which is a linkage and choke-point for salmon (Minimize Tunnel Option and Tunnel under Henry Coe Option).

ii. South Lines – Pacheco Alignment:

-BA 10: This is the Santa Cruz Mountain – Mt. Hamilton Mountain corridor which is a choke point for mountain lion, bobcat, and coyote.
-CC 19: This corridor is a population recovery "stepping stone" and/or "migratory stopover" habitat for neotropical migratory bird species. It also provides connectivity for steelhead with headwaters spawning and rearing habitats, as well as a movement linkage for large and small mammals. Least bell's vireo was recorded here in 1997. This corridor is crossed a second time on Gilroy Bypass Option.
-CC 22: This is an important corridor for medium/ large-sized carnivores, including mountain lion.
-CV 18 (two different corridors with similar impacts): The species impacted by the disruption of this corridor include San Joaquin kit fox, blunt-nosed leopard lizard, and kangaroo rat. The important habitats in this corridor include Grassland, Alkali scrub, Alkali sink scrub, and marshland. This area is noted as important to the San Joaquin Recovery Plan.

II. Adequacy of mitigation measures

A. The EIR/EIS must discuss the use and adequacy of overpasses and underpasses to facilitate species movement.

Yanes et al. (1995) studied vertebrate movement through 17 culverts under roads and railroads in Central Spain. The results of this study indicate that animal movement was dependent on culvert dimensions, road width, height of boundary fence, the complexity of the vegetation along the route, and the presence of detritus pits at the entrance of culverts. The construction of underpasses and overpasses is a nascent effort.

The following are some additional underpass/overpass issues that should be incorporated in the mitigation discussion:

- To reduce collision, fences should be checked, repaired, and built high enough, and vegetation should be kept down so that wildlife is not attracted to the railway.
- Wildlife crossings should be installed at a frequency of one every 1-3 km in areas where there are large animals, regardless of how many large animals are observed, and one every 5-10 km where there are no large animals but the habitat is favorable for them. Because these animals follow traditional routes, success depends greatly on the location of the passage. The crossing should be built on the exact site

of the interrupted path if it is to be really effective. The restoration level should be as near as possible to the natural ground level; however, connecting gradients does not make the structure ineffective.

- Underpasses are effective only if they are large enough and properly landscaped.
- Planting trees along the lines, the tops of which would be at least the same level as the top of the pylons, can reduce the risk of collision for some bird species.
- For amphibians, some of the compacted ballast under the rails should be removed, and prefabricated corridors should be installed under the rails. For tortoises, netting should be buried 10 cm deep alongside a rail to direct them to a passageway.
- Vegetation in edge zones that is attractive to ungulates should be removed. Elimination of vegetation from railway verges makes it easier to see animals alongside the railway and limits their presence by not attracting them.
- Reflective mirrors, repellents, ultrasound, and road lighting are not effective in reducing collisions.

See COST – European Co-operation in the Field of Scientific and Technical Research. 2000. Habitat fragmentation due to transportation infrastructure. COST 341, French state of the art report

1. San Joaquin Kit Fox:

Underpasses are the preferred crossing structure for SJKF and should be at least 0.5m high and 0.5m wide. Also, in order to maintain normal daily movement patterns, underpasses should be placed every 0.5km. Exclusionary fences should be used to encourage foxes to use the crossing structures (Bjurlin 2003). Fencing should be buried in the ground deep enough that coyotes, foxes, and other digging animals cannot dig under them and enter the tracks. Artificial dens and dens to escape predators should also be incorporated alongside the tracks in San Joaquin kit fox habitat.

B. Numerous reasonable mitigation measures were not even discussed in the EIR/EIS.

The EIR/EIS discussion of mitigation was so cursory that it failed to include the following potential mitigation strategies:

ii. Speed of operation
iii. The preference to construct rail lines along existing roads only
iv. The installation of wildlife warning devices
v. Reduced train speed in wildlife areas or during times in which wildlife are active (e.g., May for bears).

vi. Carcass removal to decrease attraction for carnivores and scavengers.
vii. Clean up of any spilled grain or food attractants.
viii. Reduce vegetation that is attractive to wildlife
ix. Minimizing fragmentation and/or maximizing the ration of areas of fragments.
x. Narrowing travel corridors.
xi. Insulation of catenary suspension wire.
xii. Oversizing of insulators to discourage perching by birds.

These are just a few of the mitigation options that should be discussed in the EIR/EIS.

Again, biological impacts of the high speed train will vary considerably based on alignment. The EIR/EIS must provide the information necessary to evaluate these differences. The analyses suggested above, which are technically feasible, must be performed in advance of alignment decisions.

III. Conclusion

We appreciate the opportunity to provide scoping comments in response to the Notice of Preparation of the Proposed California High Speed Rail Project, Bay Area to Central Valley Corridor, Environmental Impact Report/ Environmental Impact Statement (EIR/S). Please keep us informed of any upcoming matters related to the High Speed Rail project.

Sincerely,

Roman P. Czebiniak
California Representative
Defenders of Wildlife

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Dan Leavitt

From: Carrie Pourvahidi
Sent: Thursday, December 15, 2005 11:06 AM
To: 'Ellen Unsworth'
Cc: Dan Leavitt
Subject: FW: EIR/EIS Comments

-----Original Message-----
From: HSR_Online_Comments@hsr.ca.gov [mailto:HSR_Online_Comments@hsr.ca.gov]
Sent: Wednesday, December 14, 2005 8:32 PM
To: Carrie Pourvahidi
Subject: EIR/EIS Comments

Date: 12/14/2005

Title:
Name: Roman Czebiniak
Organization: Defenders of Wildlife
Occupation:

Email: rczebiniak@defenders.org
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Fax:
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Comments:

December 14, 2005

Dan Leavitt, Deputy Director
California High Speed Rail Authority
Draft Program EIR/EIS Comments
925 L Street, Suite 1425
Sacramento, CA 95814

Re: Scoping Comments in Response to the Notice of Preparation for the Proposed California High Speed Rail Project, Bay Area to Central Valley Corridor, Environmental Impact Report/ Environmental Impact Statement (EIR/S)

Dear Deputy Director Leavitt:

On behalf of Defenders of Wildlife and our more than 100,000 members and supporters in California, I am writing to provide scoping comments in Response to the Notice of Preparation for the Proposed California High Speed Rail Project, Bay Area to Central Valley Corridor, Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) for the Proposed California High Speed Rail Project ("Project"). While we support the concept of providing high speed rail transportation to California's growing population, we are nonetheless concerned that this project's environmental documents may not be in compliance with the California Environmental Quality Act ("CEQA") and National Environmental Policy Act ("NEPA").

I. The EIR/EIS Analysis of Biological Impacts

The EIR/EIS documents for the proposed Bay Area to Central Valley Corridor must discuss the relative quality and importance of the habitat to be destroyed in relation to the overall survival of applicable species. Failing to do so will render the EIR/EIS inadequate for informing alignment decisions because alignment choices will sharply affect most, if not all, of the biological impacts listed below.

A. Data/Information:

The EIR/EIS identification and analysis of wildlife habitat cannot be limited to the habitat occurrence data in the California Natural Diversity Database. These occurrences are not comprehensive and only cover areas that have been surveyed. Large amounts of unsurveyed land (often private lands) may have higher densities of species, but since no surveys have been conducted, the quality of this habitat is unknown. However, the EIR/EIS would score this as low to zero habitat value. It is unacceptable to make decisions regarding the relative impact of the various route alternatives (and indeed impossible to identify the least environmentally damaging alternative) without on-the-ground data that reflect the real biological condition.

Similarly, the EIR/EIS identification and analysis of wetlands cannot be limited to the National Wetlands Inventory. The Inventory database provides only a very coarse and incomplete analysis of wetlands in California. The database is compiled by aerial photographs of landscapes in which many smaller wetlands are not readily distinguishable. In addition, many areas in California have not been photographed. In order to ascertain a more complete picture of wetlands impacts, the environmental documents need to conduct a more thorough review of potential wetlands impacts, including on-the-ground surveying efforts.

B. Analysis of General Impacts to Biological Resources:

Roads are one of the top causes of species imperilment in California (National Wildlife Federation 2001) and the impacts of railroads as linear transportation features are assumed to be similar. Specific ecological effects of roads have been thoroughly documented (Forman and Alexander 1998, Trombulak and Frissell 2000, Natural Resource Defense Council 1999). The key impacts are mortality from project construction, road kill, habitat fragmentation, alteration of movement and behavior, spread of exotic species, spread of human activity, reduction of environmental quality, and facilitation of urban sprawl. All of these are major impacts to wildlife that must be discussed in the EIS/EIR.

1. The EIR/EIS must consider the environmental advantages of Rail Corridors over Highways

The EIS/R must explicitly list and discuss the following advantages of railway corridors over highways (from DeSanto and Smith 1993):

1. Water drains away from the railbed, maintaining a dry environment that prevents unwanted vegetation from establishing.
2. The bed and banks have a porous, stable ballast that prevents runoff from concentrating, keeps slope erosion to a minimum, and filters out particulates and chemical pollutants.
3. A service road or other narrow strip running alongside the rail prevents ballast spoils from shifting beyond the toe of the roadway slope.
4. Drainage ditches parallel to the rail prevent uncontrolled erosion, act as sediment traps, filter railway runoff, and insulate adjoining land from uncontrolled channel flow.
5. High Speed Rail (HSR) construction usually leaves a significantly smaller footprint than road construction, so it has smaller short-term impacts.
6. HSR corridors are narrower than roads, so animals are more willing to cross under them. This is a significant advantage.
7. It is more feasible to elevate an HSR system on pile-supported structures than to elevate a road. "Elevated corridors on bridges or viaducts undoubtedly have the least disruptive impact on wildlife movement and migration passageways."

The EIR/EIS must include a sufficiently detailed discussion of these issues.

2. The EIR/EIS must analyze the impacts of habitat fragmentation

Expanding networks of roads force wildlife to live on ever-shrinking islands of habitat, where it is more difficult for them to find food, water, shelter, mates, and protection from predators. Genetic problems such as inbreeding appear, and populations become more susceptible to catastrophic events such as wildfire. The resulting fragmented habitat inevitably leads to smaller populations of wildlife, and extinction of populations or species becomes more likely.

Fragmentation also increases the ratio of edge habitat to interior habitat, which is harmful to those species that need interior habitat. The concept has been best documented in forest-dwelling birds. The inside of a habitat has a different climate and supports different and usually more sensitive species than do the edges. In forested areas, edges associated with roads are a source of nest predators and brood parasites. Aggressive species such as brown-headed cowbirds and blue jays thrive in edge habitats (e.g. Baker and Lacki 1997). Snakes, raccoons, and other predators hunt along the edge. Species that occur only within the interior of forests, such as the ovenbird, scarlet tanager, hooded warbler and a number of other migratory songbirds, can't withstand the predation or can't compete against the more aggressive edge species, and they die out, reducing the biodiversity of an area (Porneluzi and Faaborg 1999, Rosenberg et al. 1999, Robinson et al. 1995). DeSanto and Smith (1993) discuss the habitat fragmentation consequences specific to HSR systems. They conclude that the long-term impacts of habitat fragmentation are directly related to the area and type of habitats replaced and discuss. A European Commission Report (COST 2000) discusses the habitat fragmentation effect of railways.

The Missing Linkages report and associated GIS overlays identify major areas of movement throughout the state. However, identifying areas where these linkages will be cut off by the HSR route does not adequately address the significant habitat fragmentation impacts that the alignment will have. Every mile of this rail corridor has the potential to fragment habitat of species and have impacts on ecological functioning. The EIR/EIS must be present the significant fragmentation impacts of the various alignments to wildlife species of concern, not only species that are currently threatened and endangered.

The EIR/EIS should place special emphasis to wide-ranging species such as mountain lions, coyotes, bobcats, and bears. By virtue of their need to access large areas of habitat, these species would be significantly impacted even if they are not currently identified as "sensitive." Much work has been done looking at the movement needs and impacts of roads on these species (e.g. black bears - Brody and Pelton, 1989, mule deer and elk - Rost and Bailey 1979) and even their needs in terms of wildlife crossing to avoid and mitigate impacts from transportation infrastructure (e.g. Evink 1990, Leeson 1996). Specifically for mountain lions, a 9 to 12 foot fence, with a 12-48 inch foot overhang with barbed/predator or electric wire at the top to stymie a cat from climbing over are recommended. Florida uses a 10 foot fence with 3 barbed wires for an overhang to keep lions off highways and channel them into culvert underpasses. A noted above the HSR proposes to use security fencing that is only 8.2 ft high. Insufficient height and design could potentially lead to mountain lions on the track, obviously a threat to wildlife survival and human safety.

Habitat fragmentation can present significant problems for the normal functioning of ecological processes. For example, pollination is a major ecological process that will be impacted by the proposed HSR project. Bhattacharya et. Al (2003) found that while bumblebees have the ability to cross a road and a railroad, these structures may restrict bumblebee movement and act to fragment plant populations because of their site fidelity when foraging. The bumblebees they studies rarely crossed railroads even when suitable habitat was only 30-40 m away on the other side. This signifies that High Speed Rail may have significant and unquantifiable impacts on plant species which depend on these pollinators for their reproduction, genetic flow and ultimate survival. Additionally, the rail will fragment bumblebee (and presumably that of other insect) habitat, with the associated lower survival and reproduction. The ability of an ecosystem to survive a natural disaster (such as fire, earthquake, windstorm, disease outbreak) is decreased as habitat is fragmented. Fragmentation also limits the ability of species and ecological communities to respond and adapt to global climate change. The EIR/EIS must address the impacts on all such ecological processes.

3. The EIR/EIS must analyze impacts from the invasion of non-native species alongside rail alignments.

Roads spread exotic species of plants and animals, which then compete with native species. Exotic plants tend to favor disturbed habitats, so they thrive along the side of new roads. They also tend to grow and use resources very fast, depriving native vegetation of important resources. In the past, exotic species sometimes have been introduced to roadsides to control erosion, with severe ecological consequences. Along a California pipeline, exotic species invaded adjacent grassland, coastal sage, and oak woodland habitats (Zink et al. 1995). In the Mojave desert, the plant Brassica tournefortii has spread along roads and since 1995 has been encroaching beyond roadsides into pristine habitat. Similarly, Hirschfeldia incana [Brassica geniculata], Descurania sophia, Sisymbrium irio, Sisymbrium altissimum, and Salsola spp. are also found locally along roadsides in the Mojave (Brooks and DeFalco 1999). The ecological changes associated with these exotic plants directly degrade habitat for the threatened desert tortoise. Gelbard and Harrision (2003) found significantly more invasive species at distances closer to roads in Central Valley grassland communities. A review of literature regarding the impacts of railroads on wildlife (van der Grift 2001) indicates that trains introduce exotic plant species through the spread of seeds. The EIR/EIS must discuss the potential impacts to native species posed by the resultant spread of invasive species and present appropriate mitigation.

4. The EIR/EIS must analyze impacts to wildlife from noise, vibration, lighting, and electromagnetic fields (EMF) and electromagnetic interference (EMI)

The construction and operation impacts of the proposed HSR will have major impacts on wildlife. The ecological impacts due to noise, vibration, lighting, electromagnetic fields (EMF) and electromagnetic interference (EMI) must be analyzed in the EIR/EIS.

Noise, vibration and lighting all lead to avoidance by wildlife species and contribute to habitat fragmentation (DeSanto and Smith 1993). Many animals use sound to communicate, navigate, avoid dangers, and find food (Bowles 1997). Thus, Bowles finds that negative impacts of noise are reduced health, altered reproduction, survivorship, habitat use, distribution, abundance, or genetic composition, and harassment. For example, recordings of dune buggy sounds played intermittently for less than ten minutes at a lower intensity than normal caused hearing loss in sand lizards and kangaroo rates, rendering them unable to respond to recorded predator sounds (Andrews 1990). The impacts of sound vary by pitch, duration, loudness, and species. In general, mammals hear from below 10 hertz (Hz) to over 150,000 (Hz) (Bowles 1997, Fay 1988), birds from 100 Hz to about 10,000 Hz (Fay 1988, Kreithen and Quine 1979), reptiles between about 50 and 2000 Hz (although snakes and turtles hear quite poorly - Forman et al. 2003), and amphibians between 100 and 2000 Hz (Forman et al. 2003).

Vibrations from low-frequency noise are readily detectible by some animals, especially birds and reptiles (Bowles 1997, Shen 1983). Detection of vibration is particularly important in the detection of predators, probably especially for reptiles because of their poor hearing. The impacts of noise and vibration will depend on the frequency of train passage, the type of construction, the surrounding habitat (e.g. noise will travel further in an open field than in a forest) and the speed of the train itself. Forman et al. (2003) report that noise impacts from a Dutch highway with 50,0000 vehicles per day and a traffic speed of 120 km per hour reach beyond 800 m (approximately a half mile).

Mountain lions are known to avoid crossing areas that are lit at night (Beier 1995). This behavior is expected to be true of other nocturnal species.

Defenders of Wildlife was able to ascertain through communication with an engineer from the Train Riders Association of California (D. MacNamara, personal communication) that the overhead cables will be continuously electrified. A state of the art European Commission Report (COST 2000) indicates that railways cause bird mortalities through collision with trains, overhead cables, and electrocution. Winter season has the highest number of casualties with one summer study on the North TGV line reporting 3.4 dead birds per kilometer per month. This would lead to over 3800 dead birds in the summer months on the proposed HSR 700 mile length, with yearly estimates expected to be over 7500 as more birds were killed in the winter. Birds of prey were the most vulnerable. Overhead cables are dangerous mostly for low-flying birds and birds of prey that hunt by skimming the ground. This impact can be reduced when: 1) cables form dense, continuous networks (especially near stations and railway junctions); 2) There is vegetation along the track at least as high as the cables; and 3) when the cables are in trench tracks which are avoided by birds. In the COST study, electrocution accounted for a small percentage of the birds killed on railways. It is suggested that in order to reduce this threat, the catenary suspension wire should be insulated, a platform should be installed over the support, or the insulator should be oversized to discourage perching. We have summarized suggestions for fencing and wildlife crossings that would reduce the mortality from collisions in our comments regarding mitigation.

Finally, the EIR/EIS must discuss the potential impacts of Electromagnetic Fields (EMF) or Electromagnetic Interference (EMI) on wildlife. Possible impacts could include changes in orientation, for both short and long-distance movements, avoidance of habitat, and disturbance of daily activities, all of which are likely to be significant. These impacts must be analyzed.

5. The EIR/EIS must analyze impacts to proposed and final federally designated critical habitat

The federal Endangered Species Act prohibits the destruction or modification of listed species' critical habitat. See 16 U.S.C. § 1536(a)(2). Section 7 of the ESA requires that federal agencies consult with the US Fish and Wildlife Service to determine if a project will "adversely modify" critical habitat. Id. Recent court rulings clearly emphasize that critical habitat is designated to provide for the survival and recovery of a species. (Center for Biological Diversity vs. Bureau of Land Management, Northern California District Court 2004; Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service, 9th Circuit 2004) Modification that decreases the likelihood of survival or the likelihood of recovery is unlawful. There are numerous species with designated and proposed critical habitat within the impact area of the HSR project. The EIR/EIS should consider impact in even those areas in which critical habitat is only proposed as potentially significant impacts because by the time the environmental documents for this project are finalized, most of the proposed designations will have become final.

Critical habitat is comprised of land officially designated by the USFWS to contain the primary constituent elements for a listed species. This habitat cannot be "adversely modified" in any way that would impact the survival or recovery potential of the species. Clearly running a HSR track and fencing the entirety of the alignment within critical habitat would constitute adverse modification.

6. The EIR/EIS must demonstrate and assess its consistency with federal threatened and endangered recovery plan goals

The federal ESA requires the development of a recovery plan for species that are listed as threatened or endangered. The purpose of the ESA is to provide for the ultimate recovery of at-risk species, thus the goal of every recovery plan is to reach a level of conservation to ensure survival of the species and thus allow it to be removed from the ESA list. Recovery plan are often state of the science documents that have been developed by the experts of the relevant species. These plans are excellent road maps, including the identification of core recovery units that provide the necessary context within which to analyze the impacts of particular projects on a listed species. As such, these plans should be consulted and the EIR/EIS must analyze consistency of the proposed project with these plans and the ultimate choice of alignment must not conflict with these plans. Currently there are recovery plans in place for the San Joaquin kit fox, desert tortoise, Bay checkerspot butterfly, delta smelt, California red-legged frog, blunt-nosed leopard lizard, California condor, marbled murrelet, giant kangaroo rat, Fresno kangaroo rat, short-nosed kangaroo rat, Tipton kangaroo rat, San Joaquin Valley riparian woodrat, arroyo toad, Pacific pocket mouse, Riverside fairy shrimp, and San Diego fairy shrimp. Recovery plans are being developed for 15 vernal pool species, the giant garter snake, Alameda whipsnake, and western snowy plover and these should be incorporated into the EIR/EIS analysis if they have become available by the time of the next draft. To the extent possible, input should be solicited from the US Fish and Wildlife Service to receive any draft recovery goals or input for these species.

7. Scientific literature to be considered

A vast amount of literature exists about the impact of roads on ecological systems, much of which is equally applicable to high speed rail. Notable summaries are covered in Forman et al. 2003, NRDC 1999, Evink 2002, and White and Ernst 2003. We request that an in-depth literature review be conducted on the impacts of high-speed rail on biological resources and be presented as part of an updated EIR/EIS. We specifically request that Rodriguez et al. (1997), Andrews (1990), Yanes et al. (1995), DeSanto and Smith (1993) be included in this review.

8. The EIR/EIS must asses impacts to conservation lands and planning areas

Regional conservation plans and County General plans are both designed to direct development into certain regions based on stated priorities. The addition of HSR service and associated stations will have an enormous impact on growth of this development. The impact of the HSR alignment options must be analyzed for consistency with regional conservation plans and County General Plans. The EIR/EIS must discuss the impact of the proposed project on all ecological reserves and regional conservation planning efforts. In addition, the regional conservation plans that are currently in scoping or planning phases must be considered and discussed as impacts from HSR could significantly change their reserve design capabilities.

9. The EIR/EIS must assess the economic costs of wildlife impacts

In France, there are 16,500 km of railway lines: 1500 km of TGV lines (existing and under construction) and 15,000 km of main lines (in service and electrified: electrification is used as a criterion of heavy traffic). The cost of direct collisions with wildlife is considerable. In 1992, on the high speed South East line (Paris-Lyon) 21 collisions incurred an expense of 1.26 million Francs (192,000 euros), due to delays and equipment repair costs (COST 2000).

10. The EIR/EIS must analyze the disruption of wildlife movement corridors

The EIR/EIS analysis must identify the relative impacts on wildlife corridors that would be caused by each potential alignment. Furthermore, this analysis must go beyond the by the Missing Linkages Report, because the report lacks an adequate analysis regarding which species are affected. Additionally, there is no analysis of the level of the impact on these species in terms of the significance of the disruption of their movement corridors on their ability to survive. For instance, a fence that was erected to keep foot and mouth disease from spreading into South Africa caused the death of hundreds of thousands of wildebeest because it prevented them from moving north (Andrews 1990). Impacts that must be discussed include entanglement in fences, restriction of access to needed water supplies, prevention of movement into good habitat, disruption of seasonal movement, limited dispersal which causes local overpopulations, and inbreeding due to genetic isolation. Therefore, the EIR/EIS must include identification of the species, the specific corridors that would be disrupted, and what this disruption means for the species' conservation for each considered alternative.

11. The EIR/EIS must include an analysis of impacts to vernal pools/ wetlands

Any adequate analysis of the vernal pool and wetlands impacts must go beyond the data contained in the National Wetlands Inventory. This inventory is incomplete in California and, similar to the reliance on the CNDDB for species occurrences, is biased towards areas that have been surveyed opportunistically. A complete analysis of wetlands impacts requires on-the-ground surveys to document presence. Additionally, wetlands are impacted far beyond the project footprint, with any changes in watershed hydrology potentially altering wetland functions anywhere within that watershed. For vernal pools, initial proposed critical habitat (67 FR 59883 59932; September 24, 2002) should be used to determine impacts to the 15 listed vernal pool species critical habitat. The final vernal pool critical habitat is currently under litigation due to the exclusion of nearly 1 million acres based on faulty calculations by the US Fish and Wildlife Service. Until an acceptable new designation is released, the original proposal must be used to assess the impacts.

C. Species and habitat concerns that appear in several alignments

1. Impacts to Grasslands

Central Valley grasslands are a highly threatened ecosystem, with over 95% of the native habitat overrun with invasive, annual grasses. The remainder is under imminent threat from urban and suburban development and changing agricultural practices. Special statues birds (including federally and state listed threatened and endangered or special concern) number seventeen and include: Swainson's hawk, California burrowing owl, loggerhead shrike, horned lark, grasshopper sparrow, northern harrier, white-tailed kite, white-faced ibis, tri-colored blackbird, sandhill crane, ferruginous hawk, prairie falcon, short-eared owl, golden eagle, mountain plover, long-billed curlew, and Merlin. Additionally, Central Valley grasslands attract the highest density and diversity of wintering raptors anywhere in the world. This habitat also supports several endemic or near-endemic species or subspecies of reptile and amphibians including the San Joaquin whipsnake, the blunt-nosed leopard lizard, Gilbert's skink, and the giant garter snake. The Delta green ground beetle and Valley elderberry longhorn beetle are federally listed insects that occur in grassland habitats. Grasslands historically supported several large mammals including pronghorn antelope, elk, (including Tule Elk), mule deer, grizzly bear, gray wolf, coyote, mountain lion, ringtail, bobcat, and San Joaquin kit fox, many of which still roam the less developed remnants.

The EIR/EIS must adequately analyze the impacts in terms of quality of habitat that will be impacted and how this effects the ability of species to survive as well as use this habitat as part of the Pacific Flyway. Of particular concern is the Grasslands Ecological Area of the northern San Joaquin Valley, This is a 160,000-acre area in Merced County located between the towns of Dos Palos, Los Banos, Gustine and Merced. The Grasslands includes seasonally flooded wetlands, semi-permanent marsh, woody riparian habitat, wet meadows, vernal pools, native uplands, grasslands, and native brush land. This collection of diverse habitats is important for a wide variety of wetland species and hundreds of thousands of shorebirds migrate through the area. It has been recognized by the Western Hemisphere Shorebird Reserve Networks one of fifteen internationally significant shorebird habitats, by the American Bird Conservancy as a Globally Important Bird Area, and is currently nominated as a Wetland of International Importance under the Ramsar Convention. All three of the prestigious titles recognize the importance of the grasslands to a variety of wildlife, including several rare and endangered species, its critical role as wintering habitat for Pacific Flyway waterfowl, and its status as the largest remaining block of wetlands in what was once a vast Central Valley ecosystem. Although Grasslands provides wintering habitat for twenty percent of the Pacific Flyway waterfowl populations, encompasses one of the largest remaining vernal pool complexes, and supports several federally listed or proposed threatened and endangered species including the San Joaquin kit fox, Aleutian Canada goose, Swainson's hawk, and tri-colored blackbird, this area was not adequately addressed in the original Draft EIR/EIS.

In addition, the growth-inducing impacts of stations in Los Banos, Merced, and Gilroy will be enormous for the Grasslands Ecological Area and must be analyzed. We predict that these impacts will be too significant to mitigate. As a result, we recommend no stations be built in these locations. The final alignment may need to avoid this area altogether due to the ecological impacts. Ultimately the goal of the HSR project should be to connect the larger metropolitan centers in the state, not to create more in ecologically sensitive areas.

2. California Burrowing Owl

The California burrowing owl is a California state species of special concern. This species is known to occur (CNDDB) throughout the entire alignment of the HSR proposal. Records indicate that California burrowing owls have been found within 1800 ft of previously proposed alignments, including: Sacramento to Stockton (Alignments UP1, UP2, BNC1, BN1, UP5, UP6, BNC2), San Jose to Oakland (west and east alignments), San Jose to Merced (Southern route alignments), and Tulare to Bakersfield.

Of particular concern is that burrowing owl often prefers to nest near roads and artificially raised areas (such as berms and levees). Clearly, nesting near the HSR alignments could pose a problem in terms of survival including collision mortality, increased predation risk, and decreased habitat connectivity. We expect the EIR/EIS to include information an all impacted species such as the following example for burrowing owl:

- Species description
- Distribution
- Seasonal activity
- Substrate Affinities and Burrow use (or equivalent special habitat needs)
- Home range
- Reproduction
- Dispersal
- Habitat characteristics
- Population status
- Threats
- Conservation status
- Impact of proposed project
- Mitigation
- Justification that mitigation reduces the impacts to a non-significant level

D. Impacts to potential alignments in the Bay Area to Central Valley Corridor

The spatial area analysis of species and habitat within a specified distance to each potential alignment must be sufficiently considered for all impacts, especially fragmentation and wildlife movement corridor impacts. A biologically defensible impact zone must be determined and analyzed in the EIR/EIS. In the GIS analysis references in prior comments to the HSR Authority, we buffered the proposed HSR alignments by 1800 meters on each side, as Forman et al. (2003) indicate that several biological effects of roads (including stream sediment, noise, vibration and light, habitat fragmentation/isolation, disruption of wildlife movement corridors, invasion by non-native species, and increased human access) go well beyond 1000 m.

Although we understand that the HSR Authority will consider new alternative locations for the Bay Area to Central Valley corridor, our understanding is that several locations initially considered in the original Project EIR/EIS will most likely be considered in the upcoming corridor-specific EIR/EIS. The information and comments that follow are therefore expected to be applicable.

1. Bay Area to Merced Route:

The following comments are in addition to the detailed comments previously presented by the Loma Prieta Chapter of the Sierra Club to the HSR Authority:

San Joaquin Kit Fox (SJKF)

The EIR/EIS must identify and analyze the SJKF habitat will be impacted by the Bay Area to Central Valley corridor alternatives. This analysis must include essential elements of SJKF biology, especially pertaining to movement needs, which make it particularly susceptible to negative impacts from the proposed high speed rail project. Without knowing the characteristics of this impact, it is difficult to impossible to plan to avoid and mitigate them. The EIR/EIS must include information such as the dispersal requirements and discuss wildlife crossing structures and how they can best be designed for this species. In particular, we request that information from previous crossings developed in consultation with the US Fish and Wildlife Service and the San Joaquin Kit Fox Planning and Conservation Team be consulted. HSR alignments in San Joaquin kit fox habitat should be equipped with directional fencing, frequent underpasses, and escape dens to prevent high levels of predation by coyotes.

All north and south alignments from Merced to San Jose cross through areas within Stanislaus and or/ Merced Counties that are identified as high priority recovery efforts by the US Fish and Wildlife Service Recovery Plan for the San Joaquin Kit Fox. These proposals will directly impact between 2019 and 3122 acres of this species habitat and fence off a major wildlife corridor for this species. The resultant habitat loss and fragmentation can cause decreases in fox abundance through changes in social ecology, productivity, spatial use, dispersal, and survival (Bjurlin 2003). San Joaquin kit foxes may range up to 20 miles at night during the breeding season (Girard 2001) and up to 6 miles during the pup-rearing season. Because they move at night, any lights associated with the high-speed rail project will have a negative impact on the ability to survive in the vicinity.

a. SJ to Bay Area Route

i. SJ to SF Alignment
Wildlife movement corridors impacted:
- BA 107: This corridor contains riparian areas as well as bay wetlands. It also provides a linkage for waterfowl, shorebirds, and the harvest mouse.

ii. SJ to Oakland Alignment

Critical habitat impacted:
- California tiger salamander critical habitat is impacted by the west route, Union City to SJ via coastline alignment.
- Vernal pool species critical habitat is impacted by the west route, Union City to SJ via coastline alignment.

Wildlife movement corridors impacted:
- BA 103: This corridor includes the Alameda Creek Watershed, which is a key linkage and choke point for steelhead, western pond turtle, CA red-legged frog and foothill yellow-

legged frog. -BA 104: This corridor contains Coyote Creek, which is a linkage and choke-point for salmon. -BA 107: The HSR alignment crosses this corridor twice on the west route. This corridor contains riparian areas and bay wetlands which serve as linkages and stepping stones for waterfowl, shorebirds, and the harvest mouse.

b. SJ to Merced Alignment:

Critical habitat impacted:
- California tiger salamander
- Vernal pool species (South lines alignment)

Wildlife movement corridors impacted:
-BA 104: This corridor contains Coyote Creek, which is a linkage and choke-point for salmon.

i. North Lines - The Diablo Alignment

Wildlife movement corridors impacted:
-CV 8: This corridor is important for San Joaquin kit fox, giant kangaroo rat, blunt-nosed leopard lizard, short-nosed kangaroo rat, and LeConte's thrasher.
-CV 19: This corridor is important for Riparian brush rabbit, wood rat, W. yellow-billed cuckoo, neotropical migrants, ringtail (riparian habitat major). There is a need to maintain riparian species refugia above flood levels as part of the Recovery Plan for Upland Species of the San Joaquin Valley, USFWS 1998. -BA 103: This corridor contains the Alameda Creek Watershed, which is a linkage and choke point for steelhead, western pond turtle, CA red-legged frog and foothill yellow-legged frog. This corridor is impacted by the North Tunnel Alignment Option. -BA 104: This corridor contains Coyote Creek, which is a linkage and choke-point for salmon (Minimize Tunnel Option and Tunnel under Henry Coe Option).

ii. South Lines - Pacheco Alignment:

-BA 10: This is the Santa Cruz Mountain - Mt. Hamilton Mountain corridor which is a choke point for mountain lion, bobcat, and coyote. -CC 19: This corridor is a population recovery "stepping stone" and/or "migratory stopover" habitat for neotropical migratory bird species. It also provides connectivity for steelhead with headwaters spawning and rearing habitats, as well as a movement linkage for large and small mammals. Least bell's vireo was recorded here in 1997. This corridor is crossed a second time on Gilroy Bypass Option. -CC 22: This is an important corridor for medium/ large-sized carnivores, including mountain lion. -CV 18 (two different corridors with similar impacts): The species impacted by the disruption of this corridor include San Joaquin kit fox, blunt-nosed leopard lizard, and kangaroo rat. The important habitats in this corridor include Grassland, Alkali scrub, Alkali sink scrub, and marshland. This area is noted as important to the San Joaquin Recovery Plan.

II. Adequacy of mitigation measures

A. The EIR/EIS must discuss the use and adequacy of overpasses and underpasses to facilitate species movement.

Yanes et al. (1995) studied vertebrate movement through 17 culverts under roads and railroads in Central Spain. The results of this study indicate that animal movement was dependent on culvert dimensions, road width, height of boundary fence, the complexity of the vegetation along the route, and the presence of detritus pits at the entrance of culverts. The construction of underpasses and overpasses is a nascent effort.

The following are some additional underpass/overpass issues that should be incorporated in the mitigation discussion:

To reduce collision, fences should be checked, repaired, and built high enough, and vegetation should be kept down so that wildlife is not attracted to the railway.

Wildlife crossings should be installed at a frequency of one every 1-3 km in areas where there are large animals, regardless of how many large animals are observed, and one every 5-10 km where there are no large animals but the habitat is favorable for them. Because these animals follow traditional routes, success depends greatly on the location of the passage. The crossing should be built on the exact site of the interrupted path if it is to be really effective. The restoration level should be as near as possible to the natural ground level; however, connecting gradients does not make the structure ineffective.

Underpasses are effective only if they are large enough and properly landscaped.

Planting trees along the lines, the tops of which would be at least the same level as the top of the pylons, can reduce the risk of collision for some bird species.

For amphibians, some of the compacted ballast under the rails should be removed, and prefabricated corridors should be installed under the rails. For tortoises, netting should be buried 10 cm deep alongside a rail to direct them to a passageway.

Vegetation in edge zones that is attractive to ungulates should be removed. Elimination of vegetation from railway verges makes it easier to see animals alongside the railway and limits their presence by not attracting them.

Reflective mirrors, repellents, ultrasound, and road lighting are not effective in reducing collisions.

See COST - European Co-operation in the Field of Scientific and Technical Research. 2000. Habitat fragmentation due to transportation infrastructure. COST 341, French state of the art report

1. San Joaquin Kit Fox:

Underpasses are the preferred crossing structure for SJKF and should be at least 0.5m high and 0.5m wide. Also, in order to maintain normal daily movement patterns, underpasses should be placed every 0.5km. Exclusionary fences should be used to encourage foxes to use the crossing structures (Bjurlin 2003). Fencing should be buried in the ground deep enough that coyotes, foxes, and other digging animals cannot dig under them and enter the tracks. Artificial dens and dens to escape predators should also be incorporated alongside the tracks in San Joaquin kit fox habitat.

B. Numerous reasonable mitigation measures were not even discussed in the EIR/EIS.

The EIR/EIS discussion of mitigation was so cursory that it failed to include the following potential mitigation strategies:

ii. Speed of operation
iii. The preference to construct rail lines along existing roads only
iv. The installation of wildlife warning devices
v. Reduced train speed in wildlife areas or during times in which wildlife are active (e.g., May for bears).
vi. Carcass removal to decrease attraction for carnivores and scavengers.
vii. Clean up of any spilled grain or food attractants.
viii. Reduce vegetation that is attractive to wildlife
ix. Minimizing fragmentation and/or maximizing the ration of areas of fragments.
x. Narrowing travel corridors.
xi. Insulation of catenary suspension wire.
xii. Oversizing of insulators to discourage perching by birds.

These are just a few of the mitigation options that should be discussed in the EIR/EIS.

Again, biological impacts of the high speed train will vary considerably based on alignment. The EIR/EIS must provide the information necessary to evaluate these differences. The analyses suggested above, which are technically feasible, must be performed in advance of alignment decisions.

III. Conclusion

We appreciate the opportunity to provide scoping comments in response to the Notice of Preparation of the Proposed California High Speed Rail Project, Bay Area to Central Valley Corridor, Environmental Impact Report/ Environmental Impact Statement (EIR/S). Please keep us informed of any upcoming matters related to the High Speed Rail project.

Sincerely,

Roman P. Czebiniak
California Representative
Defenders of Wildlife

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